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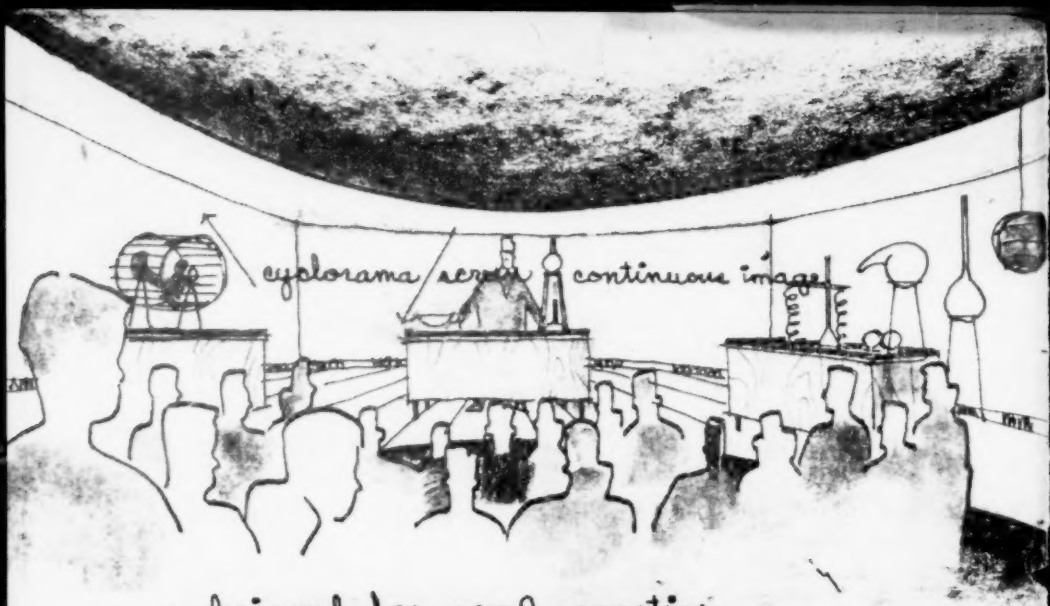

- designed for good acoustics
- designed for theater lighting
- designed for visual education
- FOCUS ON TEACHING

EDUCATIONAL TELEVISION

ABOVE: Dream situation — a cyclorama type viewing situation where student feels he is part of teaching-learning situation. Prepared by John Rowlett. (See "TV and School Planning" and "TV and School Design.")

ON THE COVER: At the University of New Mexico, Dr. Martin Fleck (left), biology professor; and Dr. Bernarr Cooper, director of University Television and Radio, plan use of blackboard demonstration. (See "Planning for Depth in ETV.")

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Planning for Depth in ETV

ETV must stimulate to thought as well as give basic information

By **Bernarr Cooper**

Director, University Television and Radio, University of New Mexico.
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● How can television best serve the educational needs for the future? This lies in the realm of trying to gaze into a crystal ball and foresee what the future needs of the educated public would and should be. In order to be able to do this, let us first consider what are the potentials and limitations of the medium as we know it, now. Certainly, much has been said and written about the ability of the television medium to reach vast numbers of people, simultaneously, with a teaching program. If we look carefully at the teaching program of today and examine it in its many aspects, what do we find? In many parts of our nation we find that educators are making honest efforts in an age when there is increasing shortage of teachers. One out of every three young persons between the ages of 18 and 20 is now attending some university or college. Increasing numbers of students must be prepared to face their responsibilities as community citizens in a democracy in which life becomes ever more complicated.

What, then, are the potentials and the limitations of the television medium? First, we find that the

medium offers certain potentials other than that of simply communicating with large numbers of students. Certainly, no one will argue with the ability of the medium to present minute detail even in a group-viewing situation so that every member of a group can see the detail clearly and as it is desired it should be seen by the instructor at work. Minute detail, then, expanded because of the potential of the television lens, so that the student may examine at close quarters that which even the human eye often may miss, is one of the great potentials of the medium. True, this is only a mechanistic potential and one which probably has less importance than some of the other things we will discover. But at the same time that the medium has the potential to present minute detail, it also has the limiting factor of confining the viewer or the student to the detail being presented. In a natural situation, the human eye is free to select whichever detail it wishes to comprehend. Or it may range over a wide variety of detail, simultaneously — provided, of course, that the object is within the viewing plane of the particular individual's eye.

Second, among the important things which we must recognize is the great limitation placed on the medium by the educational telecast planner. Are our presentations truly educational in scope? Do we plan in depth the broad educational needs for the individual in our complex world? We find, for example, that important experiments are being carried on at the elementary level. Certainly no one will deny the great advances being made at Hagerstown, Maryland, in meeting a very necessary need — that of supplying a sufficiently broad educational scope to numbers of students who might otherwise not be receiving a necessary educational fare because of the limitation of available teachers. In Chicago, at the junior-college level, great effort is being made to bring to the viewer confined to the home, many educational subject areas which the individual might not otherwise be able to pursue. We find at the secondary level, certain interesting experiments — for example, in Pittsburgh the teaching of physics at the high-school level. Thus, we find that for the most part the offerings of educational television are greatly compartmentalized, and that these offerings are, for want of a better term, horizontal, rather than offerings in depth. Are we to continue to guard in close areas our so-called educational prerogatives or have we simply not yet caught up with the potential of the medium?

● An enlightened citizenry in an increasingly involved age should perhaps be entitled to be a planned educational program from the preschool level, through the adult educational level, and on to the higher educational level in many subject areas. Our educational system has made us the victims of specialists

Dr. Bernarr Cooper (left) and Dr. Nelson, director of extension for the University of New England in Australia, discuss uses of TV to meet adult education needs in Australia.

and compartmentalization. There is little attempt to plan in depth, interrelationships between areas of learning. Often at the college level we produce college trained people who are only that — college trained — but in the true sense of the meaning are not educated, or are, at best, poorly educated. There are many noble experiments in attempting to relate areas of learning to each other through a classification known as the "humanities." The student is encouraged to investigate the interrelationship of bodies of knowledge, one with the others. However, in our scientific age, the pursuit of the "humanities" does not always equate with the idea of adequate professional preparation, in the student's mind.

We live in a highly complicated society. Indeed, it has become more increasingly complicated in democracies where great advances are made. Many of these advances are made in scientific areas, and these scientific achievements in turn in-

fluence us in every walk of life and at every moment of our lives. Thus, it becomes necessary that we understand the interrelationships and possible daily application of all areas of knowledge. Perhaps we must first recognize that we must get away from the idea that television can teach only rote content subject matter. True, rote content subject matter is necessary to a basic education. But we must stimulate to thought as well as impart basic information. Perhaps our educational system is weak in that we have not yet removed ourselves from the idea that the sole goal of education is to impart information. There are some noteworthy efforts in the direction of stimulating to thought — the goal of true education. These efforts we may note in some of the program offerings which are made available through the Educational Television and Radio Center at Ann Arbor; some of the live offerings which are telecast at WGBH-TV in Boston. But these are still isolated efforts contained only in one or two places where programs are emanated. We must recognize, therefore, that perhaps we are a little overzealous and a little "over-guilty" in making the student only a receptacle for all information. Perhaps, we must make the closer comment that everything taught is not necessarily education. More and more as the educational television medium develops we must become concerned with the techniques of inspiring to thought via a medium which has been accused of being purely mechanistic.

Another difference that we must note between the classroom and the television medium is that in the classroom the teacher often prepares and teaches alone. That is, he or she bears the complete responsibility not only for the entire content and method in which a particular area or subject is presented, but he or she also teaches alone. The teacher in television is surrounded by gifted people — technicians, production personnel — people with creative teaching ideas. The teacher who has the extraordinary experience of teaching in television — the teacher who is truly an educator capable of communicating not only to the viewer-student but who is also capable of communicating ideas and stimulating the studio staff with which he works — this is the educator who soon realizes that teaching via television can be an interesting, an exciting, and even at times an ennobling experience. The staff with which he works is not an uneducated group. They may be uninformed in certain rote content areas but the studio staff is made up of people who are often dedicated to the medium and who in turn can stimulate the teacher to discover new methods for disseminating knowledge. Teamwork, rather than isolated individual effort, then, is necessarily the keynote of every good teaching telecast.

The television medium is limited, now, in its own peculiar way, just as the classroom presents limita-

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Hunger for Learning Satisfied

● Educational TV stations are are slowly but surely being established throughout the country and thereby making it possible for a larger and larger percentage of the American people to have available for both formal and informal education a medium that many educators feel is more powerful than books. Today this medium can carry an able teacher into every home within the service area of the station. Thus he can reach more individuals in a single semester than could be reached in a lifetime in the classroom.

Some critics have suggested in the past that educational TV programs are occasionally on the dull side. However, now that educational TV has been viewed by millions, it has become apparent that the "dull" program is the exception rather than the rule and that even when a program seems a bit dull, "the dullness," as *Minneapolis Morning Tribune* columnist John K. Sherman recently pointed out, "has substance not to be found in commercial TV dullness, which has no nourishment and merely irritates. It's the difference between dull-but-interesting and dull-and-boring."

The most important point to bear in mind about educational TV, however, is the fact that there is a real hunger for more education by most adults. The older most people get, the more keenly they become aware of the gaps in their knowledge. True, those who live in an area served by a college or university have the privilege of enrolling in extension courses; and many do. Most, however, find it difficult to get to the campus regularly at a late afternoon or early evening hour so as to take a desired course. Educational TV is the answer to their prayer.

Through educational TV millions of adults now have the opportunity

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Public Understanding and Support for Education

If the nation is to survive and prosper, we must make the basic provisions now

● Propositions that need public understanding:

1. Most Americans now realize that our leadership, and indeed our national survival, is being challenged as never before in history. Most Americans must be brought to realize that the survival and well-being of this nation depend no less upon the strength of our educational system than upon the strength of our military establishment.

2. Educational institutions in a democracy are properly expected to meet the fundamental needs of society. If they are subject to passing whims and fancies, schools and colleges cannot perform this function. Responsible citizens share with educators a moral obligation to insist upon wise and careful planning to meet fundamental needs and to protect our educational institutions from hysterical demands and panicky reactions.

3. Critical analysis of our educational system is certainly in order, but mistaken efforts to place blame through name-calling and fault-finding should not be permitted to obscure the fact that our schools, colleges, and universities are seldom much better or worse than their respective publics want them to be. The best of our institutions certainly rise above common levels of aspiration, yet the vast majority simply mirror the values most commonly held. If American education is to undergo a general improvement, the people at large must place a higher value upon intellectual

achievement and must be prepared to uphold higher levels of educational performance.

4. Lip service to the value of education is not enough. The critical need is for material support. The American people can afford to spend more on education. Doing this, however, will necessitate assigning a much higher priority to the importance of teaching and research as crucial forms of enterprise in a dynamic society. There must be a willingness to practice self-denial in paying higher taxes and in making heavier voluntary contributions to provide greater support for education.

5. The time factor is extremely important, and basic issues must be faced now. Nothing less than a massive national effort, launched immediately, will do. Local support and control will remain the best safeguards and guarantors of excellence for our diverse educational system. They can and should be preserved, but bickering over forms and sources of financial support necessary to meet the present emergency can be disastrous. Positive and immediate action on all levels — federal, state, local, and voluntary — is the first imperative.

6. Economic inflation has already levied a heavier toll on educational institutions than on most other forms of enterprise. Still further inflation would be a more serious threat. If this possible consequence of vastly increased governmental expenditures for education is to be avoided, investment in our schools, colleges, and universities must take precedence over existing expenditures which are of less importance to our national security.

7. The total economic resources available for higher education, whatever they may be, will necessarily exist in limited amounts. One demand upon these resources is to raise the general level of performance in all schools and colleges. If this is allowed to be the only call, however, a tragic mistake will be made. A second, and vital, call upon our economic resources is to strengthen our leadership in all important fields and to add to our best existing institutions the appreciable support needed to meet

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This statement of propositions was developed by the Problems and Policies Committee of the American Council on Education in a meeting in Washington in late January 1958 and was published in February 1958 with the unanimous approval of the committee.

Copies of the statement are available without charge from the Publications Division, American Council on Education, 1785 Massachusetts Ave., N. W., Washington 6, D. C.

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the demands for the highest order of quality. Statesmanship must see to it that adequate support for the attainment of both goals is provided.

8. A genius of American education has been its unity through diversity. This diversity should be preserved, with strengthening all along the line and greater stress on the importance of quality everywhere. In short, all our human resources must be vastly strengthened through the medium of improved education.

● Propositions that need public support:

1. The magnitude of the job to be done can hardly be exaggerated. We are not spending nearly enough on education. Modest measures will not do the job. In colleges and universities alone, the number of qualified students will be doubled by 1970, and a doubling of expenditures will not even perpetuate present inadequate quality levels. To do the job effectively, the following order of priorities should be observed:

a. Salaries for teachers, scholars, and scientists should on the average be at least doubled;

b. Existing institutions should be maintained more adequately and some of them greatly strengthened;

c. Support for the establishment of new institutions will be necessary, but should not be supplied at the expense of existing institutions;

d. Scholarship programs should stress quality rather than quantity, graduate as well as undergraduate study, and should be accompained by a parallel system of grants to the institutions in which scholarship holders enroll.

2. Although federal support for educational activities already exists in many forms, excessive reliance upon it may weaken other sources of initiative. However this may be, we are in a national emergency, and prompt action of unprecedented magnitude is urgent. The truth seems to be that the Federal Government is the only agency which can act with sufficient speed and on a scale large enough to enable schools, colleges, and universities to accomplish their tasks. Action by the Federal Government need not, and should not extend federal controls over education. Further, as a partial attack on a problem of such great size, it need not weaken initiative and action at the state, local, and voluntary levels. Federal support should be considered only as a necessary supplement to action by state and local entities, corporations, alumni, parents, churches, foundations, and philanthropic individuals. The initiative and interest of these agencies and individuals are the greatest asset of American education; they must now be exercised to an extent never before demonstrated.

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Science 58

University of Chicago and WBKB co-operate to present science series

"Awareness of the methods and achievements of science is essential for every citizen, for science is a major force for shaping our world. The University of Chicago is co-operating with Station WBKB and the American Broadcasting Company in presenting SCIENCE 58, in the belief that this program by eminent scientists is a valuable service in informing the public and encouraging an attitude of continuing awareness in the dimensions of science."

By **Alec Sutherland**

Director of Broadcasting, Office of Radio and Television, University of Chicago.

● This is the preamble by the University of Chicago's Chancellor Lawrence A. Kimpton to a 20-page booklet issued by the University and the American Broadcasting Company's Chicago outlet. Inside is an imposing list of scientists in departments from astronomy to zoology. The Argonne National Laboratory is represented, so are the Chicago Midway Laboratories, the Enrico Fermi Institute for Nuclear Studies and the Institute for the Study of Metals.

When the project was being planned 2,500 copies of the booklet were ordered, with the possibility

that 5,000 might be needed later, but before the program went on the air 11,000 requests had come in, and as soon as the series started, they poured in at the rate of 400 a day. All this for a program which goes on the air at 7 a.m., and whose producers do not believe in oversimplification. High school teachers instructed their students to watch it, and in some cases even arranged for the school to be opened early enough for the pupils to see the programs. Letters began to come in from young people asking for copies for the entire class, the press was universally enthusiastic, and the series progressed from favorable mention by the columnists to a welcome on the editorial pages.

WBKB showed considerable imagination and courage in planning these programs. It was decided early that the material should not be watered down; the participants were invited to use technical terms as freely as they wanted to, provided only that the more esoteric were explained. The audience was assumed to be one with an interest in the subject and to have enough intelligence and application to understand scientific exposition. That this was a good guess was proved when letters began to arrive asking for copies of charts which had been shown on the first program, and enquiring where to buy the books which had been recommended.

● The format is simple. Julian R. Goldsmith, a geochemist, greets the audience every morning, describes how that day's lecture fits into the general framework of the series, and introduces his colleague to the audience. His fellow-scientist in dealing with his subject makes his own choice as to whether he should simply use the blackboard or supplement his lecture with such materials as are required to demonstrate experiments.

Stuffiness is altogether absent, as evidenced by the physicist who, after explaining the properties of dry ice and showing how it was used for camera and stage effects, suddenly quaffed a mouthful from the foaming beaker and invited the viewers to watch him turn into a hideous monster. At the end of the half-hour Goldsmith sums up, trails the next program, and invites questions.

Monday through Thursday consists of this format, and the professors taking part form a group on Friday to summarize their lectures and answer some of the questions that have come in. These range from one in an immature hand asking what happens to the writer's kite when it breaks loose, to requests for a talk on the fourth dimension or a description of how to measure the universe.

The details of the programs, 65 in all running through 13 weeks were decided upon after a series of consultations with a committee made up of members of the University of Chicago's faculty. The

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ETV Managers' Statement

Station managers list needs of ETV; foresee live national network by 1968

• Five years ago this May, the nation's first noncommercial educational television station went on the air. Today, children and adults of all ages in 30 areas of our country are reaping the benefits daily of regular educational television broadcasting service.

The record of these five years shows that even in this relatively short time educational television has achieved an important place in American education and culture.

The thirty stations now on the air represent an investment of $50 million. More than 200 colleges and school systems now are making regular use of television. Currently twenty colleges are offering courses for credit. To date, such courses have been taken by more than 50,000 students, many of whom have received higher examination grades than the average classroom student. As for public schools, the number of children receiving at least a part of their regular lessons by television now is conservatively estimated at 8 million. In addition, audience surveys show the number of viewers among the general public who regularly watch ETV stations is at least 12 million. Thus, educational television is helping to educate more than 20 million Americans in 1958.

This statement was adopted by managers of ETV stations affiliated with the Educational Television and Radio Center at a meeting held in Edgewater Park, Mississippi, in March 1958.

But we, as managers of today's educational television stations, are by no means satisfied with these achievements. We are unanimously convinced that the future potentials

of this vital new medium are barely recognizable even now. Five years ago, today's accomplishments were only a hope. Today our horizons have been pushed back to reveal a far more significant vista of possibilities for tomorrow than was at first imagined.

Over the next ten years, many forces will be at work changing and modifying the basic structure of our society. Technologists and scientists promise advances in all fields with resultant increase in leisure time; statesmen foresee more subtle and complex problems with the evolution of international politics and diplomacy; scientists, statesmen, and humanists, all look to the conquest of outer space as imminent—and these are only a few of the forces! Demands heretofore undreamed of will be made on both children and adults. Education in general and educational television in particular must meet these demands on all levels.

● We foresee possible expansion by 1968 to over 100 stations serving 80 per cent of our population. Many local stations may well have million-dollar budgets and permanent financing through endowment funds. Local ETV programming will have changed markedly as larger and better trained staffs produce average schedules probably extended to over 75 hours per week. Less expensive and more flexible remote equipment will bring new excitement and more immediacy to ETV programming. Additional dimensions will be brought to the medium with possibility of increasing use of color. In-school telecasting can be substantially expanded in character as extensive use is made of closed circuit and additional UHF television channels. The ever-increasing demand on the adult citizen will become an even greater concern of ETV programming. Providing reliable treatment of human relations and personal adjustment problems and backgrounding of national and world events which enable every citizen to act with intelligence and foresight will be a role demanding the greatest ingenuity of 1968 ETV program staffs.

The growing strength of key production centers and also the increasing number of program origination points and sources will be major factors in program construction. A master index of educational resources—both people and materials — might well be set up by national program planners to bring the best minds of our country and abroad, wherever located, to bear on any problem of national moment and to communicate their findings quickly and clearly to all citizens.

International exchange of educational and cultural programs doubtless will be increased. Distribution of programs within the United States will be facilitated by live networks as individual stations form state networks, then regional networks, until by 1968 a live, national network becomes a realizable goal.

The catalogue of ETV progress

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Direct Teaching by TV

A definitive classification scheme to help in evaluating TV teaching

By **Ronald R. Lowdermilk**

Specialist for technical phases of educational radio-television, Radio-Television Services, Office of Education, U. S. Department of Health, Education, and Welfare.

Reprinted from the Office of Education's official journal, School Life, *Vol. 40, No. 5, February 1958.*

● Everybody, educator and layman alike, seems to have an opinion about direct teaching by television. Many are all for it, many against it. Few are neutral. Some classroom teachers welcome it as a highly versatile teaching aid; others see it as a threat to job security. One school administrator hails it as the long-sought answer to shortages in school housing and qualified teachers; another considers it a stopgap measure, to be used only until a permanent solution is found. One segment of the school community applauds its use as evidence of progressive outlook; another condemns it as a second-rate substitute for regular classroom instruction.

Just where do you, the reader, stand on this question of the academic validity of using television for direct teaching of school and college subjects?

You "think it's a good thing"? Precisely what is it you are endors-

ing? Is it the use of television as a source of new and vital content materials to *supplement* the basic work of the classroom teacher? The use of it to provide a "master teacher" for every subject? Or the use of it to accomplish the total teaching job for a specific subject?

Conversely, if you are opposed to direct teaching by television, why do you object? Do you question its ability to do more than just "transmit" or "communicate" subject matter? Do you feel it tends to emphasize showmanship at the expense of fundamental education and psychological progression? Or do you doubt that it can ever hope to provide the deep intellectual and spiritual stimulation inherent in the true classroom situation?

Actually, the term "direct teaching by television" has come to have so many meanings that it is necessary to define precisely what particular aspect of it is under consideration before we can evaluate its pros and cons. Most of the major differences of opinion among researchers in the TV education field can be traced to their having assumed common meanings for certain terms that differ widely in meaning from one project to another.

A careful examination of the organic structure of more than 100 current experimental projects involving direct teaching by television reveals three fundamentally different classification bases in common use: Character and format of the lesson presentation; intended educational role of the lesson; and responsibility for content and teaching methods.

- Lesson-Presentation Format:

In terms of the character and format of the individual lesson presentation, any use of television for the direct teaching of a regular school or college subject can be classified into one or another of three categories:

Televised Education

Televised lesson presentations undertake to bring the viewer a picture situation approximating an actual classroom learning experience, with the expectation that the viewer will automatically feel himself an active participant. However, findings from research using this type of presentation tend to indicate that the average viewer, when confronted with a TV picture of a teacher before a group of students, is not so likely to feel himself a participant as to be merely a spectator of action that is happening to somebody else. Instead of paying attention to the TV teacher, therefore, he simply watches another TV drama unfolding before him.

Thus there is a growing tendency to reduce the size of on-camera student groups, or to eliminate use of such groups entirely and to employ a camera angle directly facing the teacher. Lessons originate from a

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TV and School Planning

Future uses of TV to increase efficiency and effectiveness of in-school instruction

• The technical developments in television during the past decade have been both creative and challenging. The educator need no longer debate TV's presence on a philosophical basis. The important question is, how can television best serve education?

The suggestions that follow, while forward-looking in terms of implementation, are all based upon adaptations or rearrangements of currently available equipment and facilities. No attempt is made to evaluate the positive or negative aspects of the proposals, since experimentation must provide these conclusions in a more objective manner. However, since schools serve several generations of students during their structural lifetime, it seems appropriate to indicate some of the possibilities to be considered in the planning of current and future construction for all levels of educational endeavor.

By **Philip Lewis**

Director, Bureau of Instruction Materials, Chicago Board of Education.

From an address to the American Association of School Administrators convention in St. Louis, Missouri.

The severe shortage of qualified teachers over the country focuses attention on television as a partial answer to this serious situation. However, long-range planning should not be unduly influenced by

current and (in terms of the larger educational picture) transient conditions. Television must be evaluated for its ability to contribute to raising the general level of instruction. Many of the proposals presented may give the impression of employing automation at the sacrifice of the personal touch, but educators have always worked to preserve a desirable balance in this area. It is impossible to single out a business of the magnitude of our educational system, that has not investigated improved technological developments as a means to increase the efficiency and effectiveness of the total operation.

In the past, certain pupil-teacher ratios have been held to be almost sacred. Today, in light of improvements in instructional materials and modifications in methodology, this whole area is again open to re-evaluation. Large groups can receive instruction successfully in certain areas and in particular phases of a given course, subject, or activity. Smaller sections, however, are indicated where more individual attention is required. These considerations, plus the inherent advantages of television, demand that classrooms are constructed in a flexible manner allowing for expansion and contraction of instructional areas (within seconds) according to need. A corollary problem is to provide semi-isolated viewing areas where small student groups can watch a single screen image while seated in the larger classroom.

The Kaiser Aircraft Corporation is now supplying military aircraft with a revolutionary flat television screen about the thickness of a telephone directory. In contrast to contemporary bulky viewing tubes this innovation is the first real step toward the electronic chalkboard of tomorrow. The potentialities of this device to incorporate full color representation as well as 3-D reproduction gives great promise for its effectiveness as a versatile instructional tool.

● Chalkboard size viewing screens of this type will permit the teacher and the students to write, draw, demonstrate, and perform other classroom functions under the watchful eye of miniaturized flying spot scanners (simple TV cameras) located in strategic places in the classroom. The images would be electronically magnified and available for easy viewing by the entire class. This facility would operate equally well with a microscope, models, or actual specimens. Maps, charts, flat pictures, microcards, sheet music, and graphs could be projected and enlarged in this same manner by inserting into a pickup slot selections from a card file of miniature reproductions. In fact, instructional devices would be scaled down in size because of the ability of television to enlarge and to single out pertinent details. This development would effect economies in expense of instructional materials and reduce the need for costly storage space.

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TV and School Design

Solving problems in school construction takes joint efforts of educator and architect

"The advent of television as a means of mass communication is both exciting and frightening in the power and responsibility placed in the hands of those who use it. The people are ahead of the schools in sensing the vast potential of television. No school system can escape its impact."*

This thought alone presents profound implications of television on school design.

● After reviewing the material on experimentation in this field, three conclusions became apparent:

(1) Experimentation in the use of television as a teaching method is being conducted at the elementary, secondary, and college level. In addition to this, much has been done and said regarding the use of television for adult education. (2) Very few, if any, basic conclusions have been reached as to the real educational value of this medium or as how it can best be used in teaching programs. This is understandable since the time it has been under study has been short. There are yet many problems to be solved. (3) Practically nothing has been done about the design, lighting, ventilation, furniture, and equip-

By **John M. Rowlett**

Partner, Caudill-Rowlett-Scott Architects.

From a speech to the American Association of School Administrators convention in St. Louis, Missouri.

* Dimmick, Earl A., superintendent of schools, Pittsburgh, Pennsylvania. Southern California Industry Education Conference, July 10, 1957.

ment of the new schools in which classes will be taught by television.

The people who have been initiating these experimental studies have been forced to take any space available to set up their facilities. Studios have been molded into spaces inadequate in shape and relationships to properly serve the intended purpose. Receiving stations have been forced into classrooms which were constructed in another age, and for outdated methods of education.

There is no question that at this stage of development there are multiple problems to be solved in providing properly designed space and an effective use of television for education. But these problems will be solved. Only a few serious experiments in educational television have been underway for more than one or two years at the most.

Since educators have been concerned primarily with techniques of presentation and the quality of subject matter, they have not had the time to solve the planning arrangements and environmental features of the needed space. This is the area in which the architects can be of valuable assistance, and stand ready to contribute to the solution of problems involving physical arrangements.

It has always been our belief that to adequately solve the problems associated with a school building program, it takes the combined efforts of a good educator and a good architect working together as a team.

● There is no question in my mind but that television in the future will hold the same importance in the field of education that the textbook now holds.

Assuming that this statement be true, the entire concept of education as we now know it will undergo radical changes. This in turn will change the concepts on how buildings will be designed. The thinking and planning for this change must be now. If we wait for the need to prove itself, it will be too late.

I know of some architects who have done pilot work in this field. The outstanding examples of which I am familiar are as follows: (1) The North Hagerstown High School designed by the architectural firm of McLeod and Ferrara, Washington, D. C., in conjunction with Superintendent William M. Brish of Hagerstown, Maryland. (2) In a recent book entitled *High Schools Today and Tomorrow*, written by Charles W. Bursch and John Lyon Reid, some of the implications of the use of television are clearly stated. (3) Eberle M. Smith Associates, Detroit, Michigan, prepared a report entitled "Seminar-Audio Classroom." The object of this study was to design a classroom arrangement which would permit and encourage simultaneously both group interaction and group viewing of all visual aids.

As the use of teleteaching increases, the providing of space involves two major considerations:

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Facing the Camera

Two Indiana University professors tell their reactions to TV teaching

● *Jerrold Maddox says:*

The first reaction to teaching a course via television was, for me, as for most newcomers, one of fear. One sees himself facing cameras and lights rather than a classroom of students. The classroom situation may be friendly or hostile, but one is able to determine the feelings and reactions to the material presented. The television audience seems unknown and distant. When the students become viewers and audience, one then is aware that he is a performer as well as teacher. A class becomes a program which must be staged. Finally, any member of my "class audience" is able to replace *Art Appreciation* by soap opera or a movie.

Although these fears have not entirely disappeared during our preliminary rehearsals, there has been the excitement of exchange with people of another field. One begins to see the program as a challenge to both educate and entertain, and I am discovering new and interesting ways to enrich my material. The series has now started and I hope that interest and excitement will be communicated to the audience becoming active therein.

From Listen and View with IU *March-April 1958, pp. 1-2.*

● *H. Robert Kinder puts it this way:*

Teaching on television is disconcerting, demanding, exhilarating, and effective. It understandably causes concern to the instructor approaching the medium with little or no prior experience in its use. Once in the studio, confronted with the cold, impersonal unblinking eye

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Radio and TV Speech

A Curriculum Guide for High Schools

Final Installment

By
Edward Stasheff
University of Michigan.

Ethel Tincher
Denby High School, Detroit, Michigan.

Edgar E. Willis
University of Michigan.

- ABBREVIATIONS

ABC: American Broadcasting Company;
AFTRA: American Federation of Radio and Television Artists.
ASCAP: American Society of Composers, Authors, and Publishers.
AM: Amplitude modulation (standard band).
BBC: British Broadcasting Corporation.
BMI: Broadcast Music, Incorporated.
CBC: Canadian Broadcasting Corporation.
CBS: Columbia Broadcasting System.
ET: Electrical transcription.
FCC: Federal Communications Commission.
FM: Frequency modulation.

In This Installment

Abbreviations
Listener-Viewer Organizations
Professional Organizations
Listening Project
Rating Chart for Variety Shows
Rating Chart for Quiz Programs
Rating Chart for Music Programs
Rating Chart for Radio and TV Comedy Shows
Suggested Projects for Classes in Radio and Television Speech
Suggested Equipment for a High School Radio Workshop

FTC:	Federal Trade Commission.
Kc.:	Kilocycle.
Kw.:	Kilowatt.
MBS:	Mutual Broadcasting System.
MC:	Master of ceremonies.
MPPA:	Music Publishers Protective Association.
NBC:	National Broadcasting Company.
PA:	Public address system.
RCA:	Radio Corporation of America.
RPM:	Revolutions per minute.
WBS:	World Broadcasting System (furnishes transcriptions to many stations).

● LISTENER-VIEWER Organizations

American Council for Better Broadcasts, 423 North Pinckney, Madison, Wisconsin. *Better Broadcasts Newsletter* published five times a year.

National Association for Better Radio and Television, 882 Victoria Avenue, Los Angeles 5, California. Membership entitles one to annual studies of programs, monthly bulletins, and reprints of articles.

● PROFESSIONAL Organization

NAEB (National Association of Educational Broadcasters), 14 Gregory Hall, Urbana, Illinois. The NAEB and the AERT (Association for Education by Radio and Television) are now merged into one group with the above address.

● LISTENING PROJECT

I. Listen to examples of five of the following types of announcers:

A. Staff announcers
B. Sportscasters
C. Disc jockeys
D. Commentators or announcers on serious music programs
E. Soap-opera announcers
F. Newscasters
G. MC's of audience participation shows
H. Announcers on evening comedy shows

II. List the name of each announcer and/or station over which he was heard and when (time of day or night).

III. Discuss each announcer to whom you listened according to the following criteria:

A. Voice quality (pleasing, heavy, harsh, light, nasal)

B. Rate of speech

C. Style of announcing (sympathetic, dramatic, high pressure straight forward)

D. Attitude (general attitude toward continuity that is not commercial)

E. Pronunciation (Note examples of mispronunciation, if any.)

F. Articulation (how easily understood, clarity of speech, over-preciseness)

G. Emphasis (stressing of words, ideas)

H. Word color (in words like "smooth," "sweet," "fragrant," "creamy")

I. General effectiveness

IV. Which of the announcers whom you heard would you consider to be most effective for all types of announcing? Least effective? Why?

V. Do you think women make good radio announcers? What about television announcing? Give examples.

● RATING CHART for Variety Shows

1. Is the show well balanced?

2. Do you think any skit is too long?

3. Is there too much or not enough music?

4. Does the comedian "hog" the show?

5. Do you laugh at the jokes or do you laugh because the studio audience does?

6. Are you sometimes confused? Do you wonder why the studio audience is laughing when you neither see nor hear anything funny?

7. Does the comedian have fresh humor? Or do his jokes have a tired, stale, trite flavor?

8. Is the guest star worth your time? Is there any good reason for his being there? Do you suspect he is only part of the show because his name has box-office appeal?

9. Can each part of the show stand on its own as entertainment?

10. Is the program well organized?

11. Was the advertising handled with good taste?

12. Was the entire program interesting to listen to or to watch?

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NAEB Research Fact Sheets

Series II, Number 17

Application of Sound Motion Pictures to Research in Clinical Psychology

By Leslie P. Greenhill. (From an article in Audio-Visual Communication Review, *Fall 1957; Vol. 5, No. 4, pp. 528-539.)*

The Pennsylvania State University has experimented with the uses of films in various aspects of psychological research throughout the last eight years. The Greenhill article discusses some of these studies briefly, but is mainly concerned with the ways in which films might be used for research in psychotherapy, personality diagnosis, and such things as the testing and training of clinicians.

Greenhill illustrates the importance of film to these studies by mentioning some of the results found in them. Motion pictures have aided researchers in changing attitudes in test groups, stimulating discussion in mental patients who were withdrawn, studying the actions of individuals under various test conditions, and presenting test situations to classes.

Greenhill points out some of the advantages of motion pictures as instruments of research. These advantages of film are of importance to individuals engaged in television production and film production as well as to researchers:

1. Defined variables can be built into films in a controlled fashion so that accurate comparisons can be made among the effects of several variables in different versions of a film.
2. Once constructed, the film material remains constant and therefore it can be used re-

peatedly under a variety of conditions with the stimulating material remaining unchanged.

3. It is possible to present situations in films depicting complex human interactions in a way that would otherwise be difficult to accomplish, and to study the dynamics of human interactions with or reactions to such situations.

4. It is possible to present situations in films which closely approach real-life situations and to use these as substitutes for actual performance tests.

5. The value of film as a medium for recording behavior for later analysis and evaluation.

Another interesting fact presented in the article was the way in which the researchers at Pennsylvania State University conserved on film. The secret was memomotion photography. This technique allows one photograph per second to be taken with 16mm film. The frequency is sufficiently fast to record most kinds of overt human behavior and, at the same time, considerable economy of film results. A 100-foot roll of film will record slightly over one hour of activities. The film is analyzed by viewing it one frame at a time in a special single-frame projector or in a standard film editor. To record reactions to a film presented in a darkened room the researchers used high-speed infra-red film.

I am sure that anyone interested in motion pictures or in clinical psychology, or for that matter, in research procedures, will find this article especially interesting.

—Willard Marrion

Editor's note:

The NAEB Research Fact Sheets are arranged so they may be removed from the *Journal* by pulling out from the center staples. Each fact sheet is paginated so it may be individually separated from the others.

NAEB Research Fact Sheets

Series III, Number 9

Alabama Educational Television Commission Survey

By Raymond Hurlbert and Lou Peneguy, September 1957. Fifty-six pages.

This report indicates the results of a survey of Alabama Public Schools using telecasts prepared or presented by the Alabama Educational Television Network. Reports from Negro and white schools are separated at elementary, junior, and senior high school levels, thus giving a clear picture of facilities provided at each. The report contains the following information:

1. A county-by-county survey of elementary, junior, and senior high schools in Alabama, with reference to whether or not they have television sets and use the network telecasts.
2. The number of sets in each school.
3. The location of the set(s) and screen size.
4. ETV courses used.
5. Whether or not the school used ETV the previous year (1956).
6. The total enrollment of each school.

A similar survey was conducted by the Alabama ETV Commission in 1956. Some 818 schools responded to the 1957 postal card survey, with 230 schools reporting use of the ETV telecasts. The 1957 survey indicated a rise of 19.2 per cent in the number of schools with

television sets. The majority of the schools responding have only one set. The 21-inch screen size is most common. A little over 9 per cent of the schools reported having two or more TV sets. Most sets were situated permanently in a specific classroom or in the school auditorium.

The report consists primarily of tables of the results.

—Willard Marrion

NAEB Research Fact Sheets

Series III, Number 10

Future Trends in Television Teaching and Research

By Joseph H. Kanner. (From an article in Audio-Visual Communication Review, *Fall 1957; Vol. 5, No. 4, pp. 513-527.)*

The Kanner article is primarily an outline and discussion of major current television applications. Certain subject areas of development are also considered. Kanner does not believe that TV should be conceived of as merely a transmission facility. He feels that it can be used to develop teaching methods in ways not possible in the conventional classroom. The time is opportune, says Kanner, to capitalize upon the current enthusiasm for TV by developing the medium's resources for improving teaching methods and techniques.

The "Cure-All" Concept:

The promise and performance of television have led to the belief that all educational problems can be cured by it. Frequently, the educator who feels that TV will ease the pressures of teacher shortages and over-crowded classrooms finds he has added to his problems by acquiring TV. Television has a tendency to amplify such things as boring lectures, or the inadequate presentations of material. Clearly, there must be an adequate supply of good instruction to make TV worthwhile. Television is not a "substitute for the hard work and skills required for effective teaching."

The Television Teacher:

"Personality" has been the dominant criterion in the choice of TV

instructors. Good knowledge of subject matter also is an important prerequisite of television teaching —as it is for all teaching.

In experiments conducted by the author (Kanner) with military personnel, an enlisted man without prior teaching experience or specific knowledge of the subject was able, after two hours of rehearsal with a supplied script on the subject, to present two hours of instruction in electronics to a number of classes with results indicating that the classes gained as much from him as from instructors who had been teaching a year or more.

Findings such as this have important implications both to the military and to civilian teaching situations. The materials to be presented still require competent personnel to gather them, but such a system would allow relatively inexperienced teachers to present very comprehensive instruction on nearly any subject. Kanner visualizes a group of highly skilled personnel preparing and testing effective teaching presentations to be presented by other less highly skilled or inexperienced teachers.

The Experienced Instructor:

The general trend of television instruction has been to place a qualified, experienced instructor on television and let him teach large groups or numerous classrooms. Kanner points out that often, even though these instructors may be outstanding in the classroom, they are not too successful over TV. Often these instructors are too accustomed to feedback in the form of questions and facial expressions to be able to adjust their delivery rate when only the camera is there to listen. Even the preparation of scripts has not been overly successful with the experienced instructor. Prepared scripts, taught by inexperienced teachers have been more successful because the instructor tends more to follow the rate of the teleprompter than proceed at his normal rate. Through experimental procedures on scripts, areas of the subject matter which are of especial difficulty can be gone over slowly or repeated and the repetition of

Continued on page 3C

unnecessary material deleted. To have a class on-camera, which is frequently attempted by schools, is a bad idea according to Kanner. He feels that the distractions of the classroom and the physical distraction of the teacher are best left in the classroom. With TV, the subject matter is the attraction and camera close-ups and other shots can eliminate the distractions normally found in classroom instruction.

The Question and Answer Problem:

One of the apparent drawbacks of television is the difficulty of instructors to conduct question-and-answer periods with the students. Kanner mentions that while two-way communication can be installed, tests with military personnel have shown that it had little effect upon the degree of success of the teaching. Kanner suggests that inter-communication is not essential and the instructor can use a variety of other methods to assure student participation, such as asking the student to call out, guess, or write down key materials.

Reducing Teaching Time:

According to Kanner, perhaps one of the most important features of television is its ability to focus upon the critical aspects of learning. Too often, the idea of mere transmission of material is used with respect to television teaching. This leaves the real value of television unused. Studies have been conducted which have reduced the teaching time from 30 to 60 per cent with little or no decrement in learning. In addition to the instructor motion, which a TV camera can save, it is difficult to duplicate television's audio-visual information potential in teaching. Kanner feels that more should be done with the capabilities of television equipment than mere transmission of the instruction.

Student Aptitude and Television:

Kanner suggests that more experimentation should be done in using television to teach low aptitude students. He feels that if special presentations were geared to the low aptitude students there would be an improvement in learning. The trouble now, says Kanner,

is that the TV classes are mixed and the standards of the telecasts geared somewhere between the high aptitude students and the low. This leaves the high aptitude students bored and the low aptitude students baffled. Kanner also feels that special presentations could be geared to high aptitude students so that they could learn more in the same amount of time.

Television Recordings and Films:

Existing evidence indicates that, from a teaching viewpoint, live television, kinescopes, and conventional films are equivalent. Films presented over television eliminate rooms too dark for note taking, use of instructor time for procuring equipment and classroom time for setting up equipment, and in addition can be of great use as demonstration or enrichment material to the instruction.

Point of Application Review:

To continue with the value of films and kinescopes, Kanner explains that much success has been derived from showing films used in training military personnel to these same personnel after they have been assigned to particular posts. The instruction retention of the earlier date is refreshed by this method and therefore the subject application is more easily understood and accomplished. It is a valuable aid in combating forgetfulness.

Television Research:

Kanner suggests that a central research center be established to continue studies of this nature. "Such a research center would permit the carrying out and pursuit of a series of long-range studies not possible with sporadic 'one-time' studies. Again and again, promising findings are not followed up because the research has terminated with a particular study or research effort." While the military have carried on many of these studies, Kanner feels that there is a need for greater effort from civilian sources.

—Willard Marrion

NAEB

Research
Fact
Sheets

Series VII, Number 6

The American Association of Colleges for Teacher Education Bulletins Numbers 2 through 5

Additional copies are available free, in limited quantities, upon request. Contact President E. D. Partridge, New Jersey State Teachers College, Montclair, N. J.

BULLETIN No. 2

Credit Courses Offered by Broadcast Television in AACTE Institutions — Fall 1956. Prepared by Daryl Pendergraft. April 11, 1957.

This bulletin is based upon responses to a survey questionnaire distributed by the Subcommittee on Television in the fall of 1956.

Nineteen member institutions of the AACTE reported they were currently offering credit courses by television. More schools, however, reported that they had been and were currently offering *non-credit* courses by TV. Most of the colleges and universities presenting courses for credit are generally hoping to expand their course offerings. At present, credit varies from one semester hour to three semester hours, with most credit courses carrying three semester hours. Subject matter varies from child psychology or remedial reading to Shakespeare and religions of the world. The most common practice seems to be a 30-minute program, one day a week for each semester hour credit; or fifteen to sixteen 30-minute broadcasts for each semester hour of credit. Some schools reported having only one broadcast a week, lasting 30 to 90 minutes. Broadcast time ranged from 8:00 a. m. to 9:30 p. m.

Instructor compensation for TV course-work varied with the institution. Some institutions counted the telecourse the same as an on-campus course in considering teach-

er-loads. Others considered the telecourse as two to four times as much work as the teaching of the on-campus courses for the same number of semester hours credit. In other institutions the telecourse is carried in addition to the normal teaching load and the instructor is given additional remuneration for the TV course. Frequently, this additional remuneration is the same as that paid instructors for extension course instruction. Still other institutions consider the telecourse the same as the on-campus course, but give the instructor an additional fee of as much as $25 a lesson.

As far as the students are concerned, the fee for the telecourse is generally the same as that for extension classes. Frequently, the telecourses are a part of correspondence study, and the TV lessons are aimed at enriching the course and helping the student do a more satisfactory job in his correspondence study lessons. The average number of students enrolled for credit in a telecourse offered by AACTE institutions was 57. No specific figures were available to indicate non-credit enrollments.

Of those institutions reporting on the questionnaire, only 15 per cent have their own studios, and some 80 per cent report using the facilities of a commercial television station.

Only 10 per cent of the institutions permitted telecourse credit to be used toward advanced degrees and maximum credit was usually the same as that allowed for correspondence or extension work. Reports seem to indicate that about one-third of the telecourse students are primarily interested in earning credit for the renewal of a teaching certificate.

BULLETIN No. 3

Uses of Television in Schools and Colleges. April 19, 1957.

According to the un-named author of this bulletin, the quality of research in instructional television, to date, is disappointing. While it is clearly evident that TV has tremendous implications for education, no idea of what can be expected from TV has been defined. We need more and better research evidence to intelligently mark the

appropriate place of television in education. It is the purpose of the Subcommittee of the AACTE, dealing with Television in Teacher Education, to encourage and facilitate such research.

Charts indicating three approaches to direct teaching by television, prepared by Ronald R. Lowdermilk—radio-TV education specialist, U. S. Office of Education—in connection with his work as consultant to the Hagerstown, Maryland, television project are duplicated in this bulletin.

Lowdermilk's charts give an overview of the uses schools and colleges are making of TV. Approximately 60 per cent of the schools and colleges use TV as supplementation or enrichment material; 25 per cent are teaching directly by television; and 10 per cent use it for public relations and promotion material on commercial stations. The supplementation and enrichment programs are generally informational or cultural and are broadcast over commercial or educational stations.

According to Lowdermilk, these are the three approaches to direct teaching by television:

1. Using the television program to "extend the classroom visually" so that remotely-located student viewing groups are taught while a physically-present class is given instruction in the studio: In this manner it is felt that the viewing class will feel as if they were a part of the physically-present class. The idea of using the "master-teacher" is developed in this manner. Individual viewing classes are conducted by a proctor or assistant-teacher, who answers questions, grades tests, checks homework, and occasionally assigns supplementary material.

2. The broadcast-production approach: In this approach, the TV courses are to provide regular school or college material to students who cannot be accommodated in regular in-school classes. Production is arranged between a director and an on-camera teacher.

Each is the full professional equal of the other. They jointly decide upon what will be taught, but the "how" is left to the director. Whereas the master-teacher is on his own while on-camera, the teacher in this case performs on cue from the director. Physically-present classes are sometimes used, or more frequently, the on-camera teacher teaches the camera. Proctors and assistants are also used in this approach to coordinate classwork with TV instruction.

3. Video-instrumented teaching: In this approach, the facilities of television are used to supplement and enrich the teaching of the regular instructor, or to aid in demonstrating costly experiments, hard-to-see reactions, etc. This approach is typified by the teacher-team, which shares in the planning, writing, documentation and on-camera presentation of the particular course. The on-camera teacher is entirely self directed and may even perform camera positioning by remote control. In this system, students are rarely used in the studio. It is the "camera" that is given the lesson. Normally, each viewing group is supervised by a regular teacher who is a member of the teaching team. Prior to each lesson he prepares the class for the telecast, then following it, he again assumes control to do the application phase of the total teaching job.

BULLETIN No. 4

Points of View Regarding TV in Education. A statement on in-school uses of television formulated by the Committee on Television, American Council on Education June 14, 1957.

The committee points out that no one has suggested that television, either closed-circuit or open broadcast, will or should supplant all other modes of education or that the total task of the schools could be handled in such a manner. In

all cases, the end sought has been the selective use of the medium in combination with more traditional methods of teaching so that the learning process may be reinforced both quantitatively and qualitatively. There is a danger either in looking upon TV as a cure-all for educational ills, or in failing to extend the exploration and experimentation over the total scope of the problem.

1. The total-teaching approach: Basically, this approach is designed to use a TV-instructor as a replacement for the classroom teacher, or to extend the services of the classroom teacher to a greater number of students. Many experiments are needed to identify the problems and probe the value of such an approach. It may be that such an approach can be justified for certain subject matter and particular grade or age levels under specific circumstances. The shortage of qualified science teachers at all levels, or qualified teachers of foreign languages at the elementary school level, might justify the presentation of total-teaching experiences in these areas, though not necessarily in other areas.

2. Enriching segments: This approach has characterized much of the thinking with regard to the use of visuals in the classroom. It attempts to supplement and enrich the work of the teacher by providing materials which are not available in the local setting, or not appropriately organized for use in the classroom. Such materials must be carefully designed to support and integrate with the direct instruction procedure. Much experimentation is necessary to determine those points at which such reinforcement is most effective, as well as the best methods of providing such materials.

3. Inaccessible resources: Here the effort is made to provide a complete portion of the direct teaching as contrasted to

the first approach in which the total task is undertaken, and the second approach where the TV segment is not designed to replace any segment of the direct teaching. For example, rather than an experiment in electronics, the complete electronics unit of the physics course would be presented over TV. Such material could be filmed and used over and over. Naturally, the material must be carefully integrated with the total course offering, and clearly, much exploration of this approach is necessary before its value can be identified.

4. Field experience: Dental and medical groups already are utilizing TV to present post-graduate clinics to their professional colleagues in the field. Great opportunities also exist in agricultural extension work and teaching training institutions to incorporate television. Field demonstrations, laboratory and clinical activity demonstrations, and the like should also be explored via television for such professions as law, engineering, nursing, social work, veterinary medicine, and others.

More experimentation in all phases of the application of television to education are needed. At present it appears that much of the experimentation and also the financial support which makes this experimentation possible is concentrated in projects which are designed to study the values of the total-teaching approach, with too little emphasis on, or provision for, careful evaluation of the outcomes. "In the future, increased emphasis should be given to other possible contributions which television can make. Only in this way can the profession take full advantage of the great opportunities provided to education by this new electronic technique."

BULLETIN No. 5

Present and Anticipated Utilization of Commercial Broadcast Facilities and Programs by 189 Teacher-Education Institutions in the

United States. Prepared by Hilton C. Buley, president, New Haven State Teachers College. November 29, 1957.

The Subcommittee on Television and Teacher Education of the Committee on Studies surveyed the AACTE member institutions in January 1957, in order to gain information relative to the use of open-circuit broadcast television. Four conclusions can be drawn from the results of this survey:

1. AACTE member institutions, located close to commercial television stations, are genuinely interested in TV and are attempting to utilize such resources in the production of a variety of programs. In the survey, 76 per cent of the institutions were near commercial TV facilities and attempting to gain use of them. Twenty-five of the 189 had been offered, and accepted time to broadcast telecourses for credit. Over two-thirds of the institutions were taking advantage of time granted for general education and promotional programming.
2. Commercial stations have demonstrated an interest and a willingness to assist educational institutions in the production of broadcast programs. Nearly half of the 189 colleges have been given technical assistance and allowed the use of studio props and materials. About a third of the institutions have been provided with free "live" camera rehearsal time. Some institutions were even provided financial assistance. The chief drawback is the difficulty in securing a firm commitment of a desirable hour or time for specific programs. Generally, however, the overall cooperation between commercial stations and colleges has been good.
3. Professional leadership for the development and utilization of television in higher education is obtained for the most part on marginal time of faculty members whose primary responsibilities are in other fields. Only 13 per cent were given equivalent time off

from their regular duties to promote the utilization of television. Twenty-nine of the institutions reported that they appointed half-time personnel to be responsible for TV developments. Very few had provided the equivalent of of one full-time person. This leadership of TV activities has been given a variety of titles, but the most popular appear to be Director of Radio and TV or Coordinator—in that order.

4. The curriculum content of professional teacher preparation courses has not reflected the need of teachers to know how to obtain the most effective use of open-circuit programs, public or commercial. Only about half of the institutions reported any such training.

These comments may seem to indicate a reluctance on the part of the profession to accept this tremendous tool for improving the quality of teaching and extending educational opportunity, but this is not true and schools and colleges have increasingly accepted this new technique.

—Willard Marrion

Radio and TV Speech

Continued from page 24

• RATING CHART for Quiz Programs

1. Is the program's chief point to test information?

2. Is the quiz used as a basis for getting "goats" for the program?

3. Is the interest in the quiz or in the prizes?

4. Is the program likely to be annoying to anyone?

5. How is the advertising handled?

6. Is everything done with good taste?

7. Is suspense a vital element?

• RATING CHART for Music Programs

1. What types of music are played?

2. What is the quality of the band, orchestra, or record?

3. Was any other form of entertainment offered on the program?

4. How many persons would be interested in this type of program?

5. Was the advertising suitable for this kind of program?

6. Was the continuity in good taste? Was the language fresh and new or was it trite ("for your listening pleasure," etc.)?

7. What proportion of time was devoted to continuity? To advertising? To music?

8. Did the announcer show respect for the intelligence of his audience?

9. Can you analyze the music from the standpoint of art?

10. Did you learn something about the composer, arranger, lyricist?

• RATING CHART for Radio and TV Comedy Shows

1. Are most of the jokes and humorous skits written about real life situations (even though they are exaggerated) so that people everywhere can understand them? (Some poor jokes are based on purely local situations or conditions like those in New York or Hollywood.)

2. Are humorous situations original and amusing enough to make the audience laugh without any coaxing from the comedian? (Example: Sometimes after a poor joke the comedian says, "Well, aren't you going to laugh?" Or . . . "I guess I'll have to fire that gag writer.")

3. Does the "comedy line" help you to see the humorous side of everyday life?

4. Does it help you to understand either yourself or others better?

5. Is the pun-type of humor (play on words) used sparingly and only when it is easy to understand and really funny?

6. Is there a minimum of the pie-throwing, water-squirting type of humor?

7. Is the humor in good taste, carefully avoiding any situation which makes fun of a religious group or a racial group? (Would an Irishman laugh at the Irish jokes or the Irish character in the skit?)

8. Does the comedian have a good sense of timing in delivering his jokes? Does he put the punch line over effectively? Is he so good that he can put over a mediocre joke?

9. Does the comedian give others in the show a chance to enjoy the limelight? (It's tiresome to have to watch one comic "hog" every scene in a show. It's also conceited on the part of the comedian.)

10. Is the comedian genuinely funny without being almost completely dependent on elaborate costumes, disguises, and props for a laugh?

• SUGGESTED PROJECTS for Classes in Radio and Television Speech

1. Writing and reading commercial, promotional, and public-service announcements

2. Comparison of radio and television

3. Study of the history of radio and television

4. Writing and reading music continuity

5. Writing and reading continuity for fashion shows, children's programs, sportscasts, variety shows, quiz shows

6. Newscasts

7. News Commentaries

8. Sportscasts

9. Special school programs

10. Introduction of speakers

11. Talks

12. Dramatic dialogue

13. Dialect dialogue

14. Interviews, both informational and celebrity

15. Feature shows

16. Discussion, debate, round table, forums

17. Disc-jockey shows

18. Book reviews

19. Dramatic shows

20. Ad lib descriptions: One suggestion is to paste a series of pictures showing action on cardboard, then have students ad lib description of what is happening.

21. Tune in a sport show on TV, turn off audio, then have students describe action.

22. Various kinds of documentaries can be written and taped.

• SUGGESTED EQUIPMENT for a High School Radio Workshop

The following list of equipment has been prepared from recommendations made by John Reiser, supervising engineer of the radio and television studios, Department of Speech, University of Michigan. Deciding what should be included in a list of equipment considered to be absolutely essential in carrying on radio activities is a difficult problem. The list that follows represents our solution, but we realize that many teachers could refute the claim that these are minimum requirements by demonstrating that acceptable closed-circuit radio programs can be produced with much less. Let us say that this list constitutes a reasonable minimum from which the teacher may work either up or down. The prices quoted are the current net prices at wholesale equipment houses.

Control Console:

The heart of the equipment setup, the control console, can vary from a simple remote amplifier to the most intricate of units, designed for actual broadcasting. The cheapest unit available, a Bogen public address pre-amplifier, model LOM, which with an output transformer costs $120, provides five microphone channels and one phonograph input. High impedence microphones must be used with this unit, however, and these are more prone to hum and buzz than the low impedence variety. The Gates Radio Company manufactures a four channel remote amplifier for about $350, which permits the use of low impedence microphones. Four channels should provide a sufficient number of inputs to handle the average high-school production comfortably. Somewhat more flexibility and convenience can be gained by purchasing a control console specifically designed by the Gates Company for educational uses. These consoles, ranging in price from $600 to $900, include microphone switches (which simplify the problem of controlling feedback) built-in amplifiers for speakers, and a channel for a talk-back system. An RCA console, selling for about $1050, has somewhat similar specifications.

Speakers:

A 12-inch speaker with its enclosure ranges in price from $20 to $120 depending on the fidelity desired. Two speakers constitute a minimum, one for the control room and the other for the studio, to permit a talk-back system. If a room is available, a listening area free from the distractions of the control room or studio, can be equipped merely by installing a third speaker in this room.

Microphones:

Microphones ranging in price from $40 to $60 are adequate for workshop purposes. Among the companies manufacturing suitable microphones are the Turner, Shure, and Electro-Voice companies. Microphones of various directional

characteristics are needed, including those with omnidirectional, cardioid, and bidirectional patterns. The only bidirectional microphone available in this price range, by the way, is the Shure pressure gradient type, number 315.

In addition to studio microphones, a microphone for the talkback system is also needed. A crystal or dynamic microphone costing about $10 will be adequate for this purpose. The pre-amplifier needed to integrate it into the console system can be purchased for about $40.

The Cannon XL series of microphone connectors and plates is recommended and these will cost about $2.50 per microphone. About 500 feet of audio wire costing about $22 should also be available for use in installation. The Alpha brand, type 1775, is recommended.

Turntables:

Two turntables would seem to be the minimum needed for an operation having the necessary flexibility. The Rek-O-Cut model B12, equipped with a pickup arm and permitting three speeds, which sells for about $100, is satisfactory for workshop use. A housing or cabinet of some type must be provided in addition. Each turnable should also be equipped with a preamplifier and transformer. The General Electric Model UPX003B, with matching transformer, listed at $25, is recommended. General Electric Cartridges for the pickup arms are are also recommended. These sell for about $10.

If only two turntables are purchased, these can be placed in the control room and utilized for playing both sound and music records. The facilities can be made more flexible by building a sound truck for use in the studio, and a satisfactory one can be made from materials costing about $500. Rek-O-Cut turntables are also suitable for use in sound trucks; and of the three needed, one should be of the variable speed type.

Tape Recorder

A tape recorder seems to be absolutely essential to permit evaluation of work shop activities. For greater convenience and fidelity it should be wired directly into the control console. Suitable tape recorders range in price from $150 to $550, and a large variety of makes and models is available. For the latest information it is suggested that teachers write to *Audio Devices;* 444 Madison Ave., New York 14, N. Y. A booklet which lists all tape recorders currently on the market, their prices, and specifications, is available at this address.

Other Items

In addition to the above equipment, a supply of music records, equipment for producing manual sounds, and sound-effect records are also needed. For information regarding sound effects records, it is suggested that teachers write to the various manufacturers, whose addresses follow, for the catalogs of their specific offerings.

Gennett Records and Speedy Records, South 1st and B Sts., Richmond, Ind.; 67 W. 44th St., New York 18, N. Y.

Major Records, Thomas J. Valentino, 1600 Broadway, New York 19, N. Y.

Silver Masque Records, 1790 Broadway, New York 19, N. Y.

Standard Records, 1 E. 54th St., New York 22, N. Y.; 360 N. Michigan Ave., Chicago 7, Ill.; 140 N. La Brea, Hollywood 36, Calif.

This basic equipment can also be enhanced by adding such items as equalizers for the turntables and a filter. If actual on-the-air broadcasting is to be done from the studio, the quality of the equipment would, of course, have to be considerably upgraded.

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TV and School Design

Continued from page 20

(1) The conversion of space in existing buildings for television origination rooms and for television receiving rooms. (2) Proper consideration for the provision of adequate space and facilities in buildings now in the planning stage and buildings proposed to be built at a future date.

In the overall planning, the approach to the design will take on new implications. For example, we will have to think in terms of receiving classrooms that will serve groups of 10, 20, 30, 50, 75, 150, 300, and even 500 students. We will have to change our thinking in regard to the shapes of rooms which will need to be designed for the best possible viewing situations. This means giving up the building that now has a line of cubicles all the same size. Some experimenters suggest circular or hexagonal rooms while others suggest long narrow rooms. There will be a need for small rooms and a need for large rooms. Classrooms may be in clusters and have the flexibility of making little rooms into big rooms and big rooms into little rooms.

These changes will alter our concepts as to the traffic of students and the scheduling of classes, and even the entire administration of the school.

● To insure proper function of the space to be used for teaching by television, two basic needs should be considered. First, the *technical need* of providing the necessary

conduits for television cables and antenna leads; also, providing an adequate number of electrical outlets. Second, the *environmental need,* such as lighting, ventilation, sound, and decor.

Both natural and artificial lighting must be such that no reflections will occur on the screen to interfere with the viewing. The intensity of the light on the writing surface must be of similar value to that on the television screen, so that students may take notes without experiencing undue eyestrain because of contrast in light.

As for sound, little consideration has been given to the acoustical treatment of the individual classroom. The nature of television sound is such that it must receive much consideration. There has been more trouble with hearing than with seeing. Speakers located at various places in the room would be better than voice from the receiving set.

It is necessary to provide adequate methods of ventilation so that the students will be comfortable even on the hot days.

In regard to decor, it is now an accepted fact that the treatment of space has a psychological influence on people. Therefore, it is important that the selection of textured materials and color schemes be accomplished with care so that the students will experience a feeling of comfort.

- Suggested Requirements:

Out of the experimental studies to date, there have evolved certain suggested requirements for the best use of television in the teaching process.

A. Over-all Plant:
1. Television teaching center located in a convenient position on first-floor level.
2. Installation of a television distributing system to all receiving classrooms.
3. Centrally located antenna.

B. Television Originating Space:
1. Good quality cameras.
2. Adequate lighting facilities —150 to 250 foot candles.
3. Good acoustics.
4. Good ventilation. Air conditioning is necessary.
5. Adequate supply of power for the television camera and lighting units.
6. Variety of teaching aid equipment.
7. Studio should be soundproofed.
8. Film equipment.
9. Control room
10. Workshops.
11. Film audition.
12. Film projection room.
13. Film workroom.

C. Television Receiving Space:
1. Receiving space of various sizes.
2. Good acoustics in each room.
3. Good natural and artificial lighting.

4. Good year-around ventilation.

5. Built-in speakers in all rooms.

6. Built-in television sets properly ventilated.

7. Television sets if on movable stand, provide properly planned location.

8. Adequate electrical outlets for television sets.

9. Closed-circuit television equipment. (This is a controversial subject.)

10. No more than 25 students viewing a 21-inch television receiver.

11. Suggested rule of maximum distance of students from set: one foot distance per one inch of television screen.

12. Receiving set placed high enough to be seen by the students. Slightly above the eye level, but not to such an extent that undue neck strain will be caused.

13. Movable furniture (desktop chairs are more desirable than tables and chairs).

14. Adequate sight line for each student.

15. View of television screen within an extended angle of 90 degrees.

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Public Understanding

Continued from page 10

3. Greatly increased amounts of money must be allocated to fundamental research and other forms of creative and scholarly activity. These can be carried on more effectively in our colleges and universities than anywhere else, because in the academic environment the creativity of central figures is reproduced by students who have worked with them.

4. If American education is to continue to serve the best interests of the nation, drastic measures to increase the supply of highly trained persons are required in many areas other than physical science and engineering. The need for teachers at all levels and in all fields is a compelling illustration. Continued progress in the humanities, the arts, and the social sciences, as

well as in science and technology, is highly essential to our national survival and well-being.

5. Totalitarian methods are not necessary to counter the threats of a totalitarian power. These threats can be countered and overcome by our own American strengths, which in education include academic freedom for teachers, scholars, and scientists; freedom of mobility and choice of programs of study and vocations by college students; diversity of programs, forms of control, and philosophies among institutions. These qualities of American education must receive continuous, vigilant support.

● *The actions called for cannot be postponed. The priorities must be established immediately. Should we fail to do these things, the deferred costs will be too staggering to be met in time. If the nation is to survive and prosper, we must start making the basic provisions now.*

Public Understanding and Support for Education

The statement is signed by members of the Problems and Policies Committee:

William S. Carlson, President (on leave), State University of New York

Harry D. Gideonse, President, Brooklyn College

Margaret L. Habein, Dean, College of Arts and Sciences, University of Wichita

Clark Kerr, Chancellor, University of California (Berkeley)

Douglas M. Knight, President, Lawrence College

J. W. Mauker, President, Iowa State Teachers College

Joseph C. McLain, Principal, Mamaroneck (New York) Senior High School

Leland L. Medsker, Consultant, Research Project in Higher Education, University of California (Berkeley)

Nathan M. Pusey, President, Harvard University

Robert J. Slavin, O. P., President, Providence College

Logan Wilson, President, University of Texas

Members ex officio:

Lawrence A. Kimpton, Chancellor, University of Chicago; Chairman of the Council

Arthur S. Adams, President of the Council

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Hunger for Learning Satisfied

Continued from page 7

to realize the excitement a master teacher can give them when the subject-matches their aptitudes and interests. For such individuals, it need not, in fact must not, be tricked out in "dramatic" treatment or sugarcoated to an extent that makes it "phony." Technique and showmanship appropriate to the subject are, of course, to be desired. Glossing it up for popular consumption, however, serves only to alienate the serious minded who earnestly seek knowledge rather than sheer entertainment.

Does anyone believe that education is something to be taken at regular intervals like medicine prescribed by a physician? Does not education involve the expenditure of effort on the part of the learner? Unless a program involves the learner so as to motivate him to further activity, will much learning result? On the other hand, when the viewer becomes personally involved, is he not likely to find real excitement and substantial personal satisfaction in his progress and achievement in the subject?

— TRACY F. TYLER, *Editor.*

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Science 58

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advice of the scientists as to subjects and speakers was closely followed, and they and their colleagues showed such enthusiasm for the project that they hardly noticed they had contracted to get out of bed at 5 a.m. The only sign of revolt came from a professor who threatens to shave in full view of the audience while he is giving his lecture. At the time of writing he has not yet made an appearance.

Space is too limited to mention the titles of all the programs, but the general shape of the series is shown in these weekly sections:

Explorers in the Universe

The Beginning of Things

Energy

Nuclear Physics

Sea and Air
Hot and Cold
Luck, Laws, and Logic
Frontiers of Chemistry
Life and Growth
Sun, Moon, and Man
Outer Space
What Next?

What next, indeed! The programs are being recorded on Ampex and the tapes sent to New York for translation into kinescopes. ABC hopes to put them out on the network in the fall, which will give NAEB members a chance to sample some for ourselves, but not at 5 a.m.

Our hope is that apart from the education of the general public, this project will induce youngsters to rid themselves of the general belief that in order to be a scientist it is necessary to wear a beard and thick glasses, have a foreign accent, or even be a genius. As one participant remarked, scientists are like detectives; it is only in fiction that all the problems get solved. The University of Chicago hopes that its efforts will encourage further curiosity as well as help people to understand the headlines.

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Direct Teaching by TV

Continued from page 16

studio set depicting the front of a conventional classroom. The teacher stands or sits behind a typical teacher's desk, turning, from time to time, to point out words or phrases on the chalkboard or to graphic information on maps or charts. Instead of speaking to an on-camera class-group, the teacher teaches the camera directly, maintaining continuous eye-to-eye contact with every viewer.

Lesson Broadcast Production

Whether intended for broadcast over a local television station or for distribution over a closed-circuit TV system to specific viewing groups, any lesson broadcast production is actually a television program. In it, a lesson series is organized around sequentially related topics that lend themselves to TV programming. Each lesson presentation employs professional broadcast television production

techniques and showmanship. Those who advocate this type of lesson presentation contend that anything short of this will end only in failure to realize TV's "full educational potential."

It is understandable why courses presented over television broadcast stations employ this type of lesson-presentation. Lessons must conform to establish production practices and programming policies, and usually the station's regular production staff assists the teacher-on-camera. However, even in direct teaching over closed-circuit TV systems, there is at least some use of the production tricks and showmanship of professional broadcast television since most members of the system-operations staff are recruited from broadcast television.

TV-Instrumented Teaching

TV-instrumented teaching employs television programing facilities simply to enable the teacher-on-camera to do a more precise job or to accomplish a given set of teaching objectives more quickly or thoroughly than he could in the same time without it. Here, as in the better lesson presentations in *televised education,* the teacher "teaches the camera," taking maximum advantage of the opportunity to employ a variety of illustrative materials, mechanical and electrical analogs, and working models, along with production techniques and devices for directing viewer attention and aiding visual comprehension. Under no circumstance is there an attempt to make the lesson a "show." Emphasis is on expediting comprehension—not on entertaining. The TV teacher is usually entirely self-directed and, if desired, may even perform necessary camera aiming, framing, and switching operations by pushbutton remote control, thus eliminating cameramen and program director from the immediate set.

- Intended Educational Role:

Considered in terms of the precise educational role each lesson presentation is intended to serve, any direct teaching by television can be classified under one of four categories:

Supplementation Programing

Supplementation programing undertakes simply to present educationally significant material on a succession of interesting topics in any given subject. Showmanship and emphasis on human interest are used to attract the widest possible audience. No series of programs is intended to serve as the basic structural sequence for teaching any course; instead the individual classroom teacher accepts or rejects each program in a series on the basis of its applicability to the classwork in progress. In short, any program series of this type is intended to supplement the basic teaching of the local classroom teacher, not to dominate it.

Much of the educational pro-

graming initiated by local commercial TV stations tends to fall into this category, as does some of the local school-of-the-air programing.

Basic Teaching Job, Supplemented Locally

Another type of teaching by TV attempts to teach the basic essentials of a given course, leaving it to the local classroom teacher to adapt the TV lessons to the needs and interests, the comprehension level, and the experience of her class.

Of the hundred or more experimental TV teaching projects currently in progress, a majority are using this type of lesson presentation. It is also found in much of the local TV school-of-the-air programing.

Communication Only

Yet another type of TV education extends only through the communication phase of the total teaching process, leaving the classroom teacher with full responsiblity for the application phase.

Advocates of this type of TV teaching hold that most research findings showing TV teaching to be more effective than conventional classroom teaching are based wholly on achievement type tests and thus do little more than establish TV teaching's some what greater effectiveness in performing the communication phase of teaching—that, in the final analysis, research so far has produced no objective evidence that direct TV teaching can make learning functionally operative in the intellectual processes and disciplines of students. Until research proves otherwise, they contend, we must proceed on the assumption that responsibility for the application phase of teaching properly rests with the classroom teacher. However, inasmuch as the communication phase of teaching occupies somewhat over three-fourths of the average teacher's working time, the use of television for the communication phase alone may be a means whereby more able teachers can direct a greater portion of their time and energies to the application phase.

This type of TV teaching has been adopted as the basic teaching pattern for the closed-circuit television project in the public schools at Hagerstown, Md., and is finding increasing use elsewhere.

Total Teaching Job

A small but vocal minority of educators contend that, if we are ever to find a solution to our schoolhousing and teacher-shortage problems, we must ultimately permit direct teaching by television to take over the total teaching job—at least in general courses of the orientation type. They argue that, although achievement tests are the only basis for current research findings favoring TV teaching, the findings do not preclude the pos-

sibility of intangible learning gains; that, after all, learning gains from conventional teaching are predicated on the same kind of achievement measurement. Besides, they say, with more experience in direct teaching by television, methods are bound to improve; and the improvements may eventually enable psychologically precise TV lesson-presentations to do the total teaching job.

So far, however, such all-out use of television is being made only in limited experiments in selected school and college subjects and in a number of college extension courses offered to off-campus students.

● Responsibility for Content and Methods:

Finally, on the basis of who decides what will be taught and how it will be treated, any direct teaching by television can be classified into one of three categories:

Master Teacher

The "master" teacher approach to direct teaching by television means selecting the most skillful local teacher in a conventional classroom situation to serve as the teacher-on-camera and making her wholly responsible for deciding lesson content and method of presentation. Most of the earlier attempts to teach regular school and college subjects by television employed this approach, which sees television extending the classroom to take in student groups located elsewhere and enables the teacher-on-camera to reach unlimited numbers of students at once—an approach that still finds wide acceptance.

Teacher-Producer Team

The teacher-producer team approach is based on the theory that the full educational potential of television cannot be realized unless the teacher-on-camera (selected for a thorough knowledge of his subject and ability to project himself on television) is teamed up with an experienced television producer, each considered professionally equal to the other. The two decide jointly *what* will be taught, but *how* it will be presented is held to be a production matter, properly referable to the director. On camera, the teacher performs on cue from the director.

This is the approach most widely used today for broadcast of lessons over local TV stations. Even in closed-circuit projects, where there is no necessity to conform to broadcast-television usage, this approach is usual; system-operations personnel, most of whom are recruited from television broadcast stations, are inclined to favor it.

All-Teacher Team

Through another approach, all teachers of a given subject whose classes are to use a particular series of TV lesson presentations share in determining *what* will be taught and *how* it will be treated. Having

delegated to one or more of their number responsibility for preparing and making the on-camera presentations, the teachers must be prepared, as soon as the TV lesson is over, to proceed directly with whatever teaching may be needed to complete the learning experience of their classes.

This approach, developed expressly for the closed-circuit project at Hagerstown, Md., appears to be spreading, with various modifications, to other television teaching projects.

● To sum up: No attempt to categorize any given television-teaching experiment is acceptably definitive unless it classifies the teaching three ways, once for each of the three variables—*lesson-presentation format, intended education role,* and *responsibility for determining content and method.*

So what was it you were saying about "direct teaching by television"? Before you start arguing either for it or against it, take time to define precisely what aspects of it you have in mind.

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Facing The Camera

Continued from page 21

of the camera, the feeling of concern sometimes tends to rise to a near-panic level.

Television teaching is demanding in that the medium is a monster, imperturbably chewing up prodigious amounts of materials into which have gone hours and days of time and thought.

The exhilaration comes from the sense of accomplishment—and relief—when each show has been successfully concluded. It is something akin to the feeling of the athlete who has just run the mile event in record, or near-record, time.

The effectiveness derives from the fact that each student viewing the presentation tends to form the impression that the instructor is teaching him personally and individually. Thus it is an incentive to effective learning on the part of the student, and sound, imaginative, interesting teaching is the *sine qua non.*

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TV and School Planning

Continued from page 18

After classrooms have been equipped with TV receiving screens it is a simple matter to add a central audio-visual distribution center. This would consist of a series of film-chains, (TV camera-projector combinations) each tuned to a different channel. With this addition, 16mm motion pictures and other visuals can be transmitted electronically to any or all rooms from a single location. Program selection is accomplished with the receiver channel switch, and remote controls can be provided to enable the teacher to start, stop, and reverse the projector from the room location. Since direct-view television screens produce very brilliant images, light control requirements would be less critical. Thus, partially lighted rooms would permit viewing and note taking under more nearly normal conditions for the teaching-learning situation.

A relatively inexpensive expansion of the coaxial cable system connecting classrooms for viewing purposes would also allow each instructional area to be used as a studio or pickup location. However, current installations of this kind point up the need for a redesign of classroom furniture to eliminate squeaks and other disturbing mechanical noises, floor coverings of sound-absorbent material, and rooms with acoustical treatment as well as effective systems of low-level distributed sound pickup as integral features. Light control facilities must provide for illumination levels at which TV camera tubes can operate efficiently. Improvements in camera tube design are rapidly approaching the point where an adequately lighted classroom will be suitable for TV pickup without auxiliary sources. However, it is still necessary to provide additional sources beyond normal lighting requirements for present-day cameras.

While the advantages of auditorium facilities in a school must be recognized, their attendant expense in light of today's building needs call for a re-evaluation of this investment. Perhaps each school should be constructed with little theater facilities to provide a place for the origination of plays and other programs, but with provision for seating a token audience. Since closed-circuit television can electronically distribute such programs directly to the classroom a number of unusual advantages are inherent in this approach. It would no longer be necessary to move large numbers

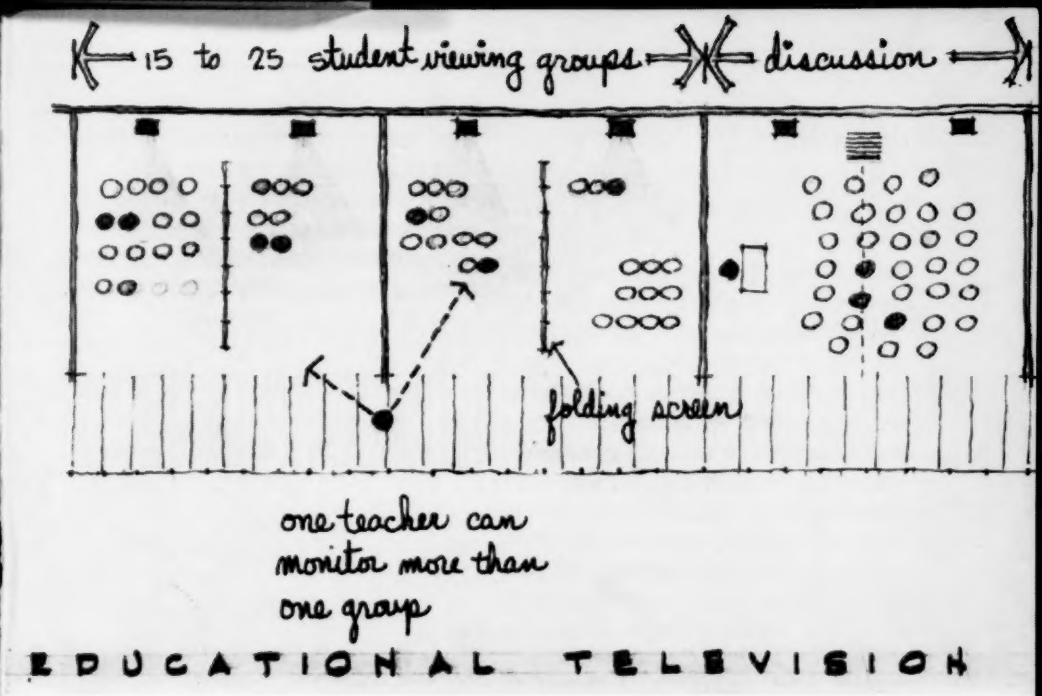
of children to a central location with the attendant disruption of the schedule of the school. Closed-circuit TV makes it convenient to "tailor" the audience for a particular program. Thus, all seniors could tune in for a careers presentation, or at another period the entering freshmen would view to receive their orientation sessions electronically. Another possibility offered by closed-circuit television is to enable other students to share the fine activities produced locally in the home rooms, division rooms, or classrooms.

This same approach would make it unnecessary to provide expensive spectator areas around indoor swimming pools, tracks, or other team play facilities, since the audience can be cared for through the regular TV distribution system in auxiliary viewing rooms. The large-screen images would retain much of the flavor of the sport and each viewer would have a ringside seat.

● Many laboratory and shop subjects involve learning skills and procedures. In conventional situations it is often necessary for the instructor to repeat the same demonstration several times to small groups within a given class. In contrast to this method each individual work station could be equipped with a small, high-definition viewing screen. As the instructor completes each step in a sequence the students can, without loss of time, duplicate the activity with assurance and accuracy. The same screens would be used for micro-enlargements and scores of other applications.

Teachers of technical, commercial, and science subjects demonstrate identical experiments or procedures on the average of five times in a given day with different classes. This requires a disproportionate amount of the teacher's time in dealing with the mechanics of the situation. The application of Videotape recording to this procedure would r e q u i r e only a single thorough preparation and demonstration which would be magnetically recorded the first time, and then played back for the subsequent classes to follow. Either the original commentary could be recorded at the same time, or the instructor could vary his narration with each class to suit their particular needs. This would allow more time for the primary job of teaching. The taped sequences could be used for review purposes and to enable students to become familiar with work missed due to absence from class. The recent development of a color adapter for the Videotape recorder overcomes the limitations of the monochrome approach.

Other video recordings of special school events, visiting lecturers, and dignitaries could be preserved in this form for later reuse. The library of the future might well incorporate a variation of magnetic recording as a more versatile development than microfilm. "Microtaped" books would reduce the need for storage and shelf space, could incorporate dramatizations or



Typical open-plan school converted to TV classes. Two TV viewing units become one class-and-discussion unit. Prepared by John Rowlett.

animated illustrations where these are pertinent to reinforce the text, and through the use of compact TV readers could give positive illumination and magnification control. Tapes could be circulated by the library for use on translators attached to TV receivers in the home.

One of the very promising developments in the educational use of television is its application to the field of teacher training. Many colleges and universities are hard pressed to provide essential classroom observation experiences for their preservice trainees. At present most of these students are programmed for observation in the final year or semester of the training program. With closed-circuit facilities employing coaxial cable or microwave hookups, it is possible to connect college viewing rooms with one or more schools in varying locations and neighborhoods to provide classroom observation experiences during the entire four-year training sequence. The classroom involved can be fitted with wall or ceiling mounted, remote-controlled TV cameras to prevent possible interference with normal classroom routine and teacher-

pupil rapport.

A mobile television truck unit equipped as a pickup-transmitter link would effectively serve a dual role. When the truck is parked in the school's drive-in shelter it becomes the transmitter and master control for telecasting programs originated in the school. When the truck is driven away for this location it can serve as a mobile microwave link to pick up images of activities occurring miles away and beam them back for distribution on the closed-circuit system of the school. Field trips involving unusual safety considerations, long distances, or large groups can be arranged electronically with this facility.

Telemonitoring, the strategic placement of tiny TV cameras whose continuous stream of images are checked systematically on a monitor panel, can be employed to release students from hallguard duty so that they need not be taken from their classes for this service. With automation affecting school heating and conditioning plants, telemetering facilities enable the custodian in charge to switch his monitor screen to pick up images from cameras located near vital gauges and indicators around the building.

● A most exciting television development is the state network concept. With this plan colleges and universities in a state are tied together by coaxial cable and/or microwave links, making it possible for expert teachers to contribute their specialties to the total instructional program of all of the other institutions, without anyone leaving his home campus. Such an arrangement, properly employed, could upgrade the quality of instruction and reach a level never before achieved to benefit the mass of the students. This concept is presently being extended with the development of multi-state networks. It is a logical conclusion to expect that a national educational television network will evolve in the not too distant future with offerings at all levels of learning.

Communications between the central office and the schools in any large system becomes increasingly complex because of all of the practical barriers that interfere with prompt and accurate transmittal of ideas and communiques. Television adaptations of facsimile machines, the use of Ultrafax (a device capable of transmitting from point to point the image contents of a 500 page book in a few minutes) could be employed to supply schools and related agencies with directives, bulletins, study guides, resource units, assembly songs, and even images of maps and charts by this method.

Centralized school record systems are practical and functional when combined with closed-circuit television. A teacher wishing to examine cumulative data concerning a particular student could dial a code number from her classroom location. The contents of the data

sheet would immediately come into view on her personal desk screen. This is merely an advanced adaptation of a technique now used in banks for verifying signatures on checks or other documents.

Delivery of educational motion picture films to schools at times when they are needed still poses an unsolved problem in transportation. Through the use of a modified Ultrafax system combined with a high speed Videotape recorder, the electronic impulses for the scheduled movies could be received and recorded automatically in a given school during the night, and be ready for playback over the CCTV film chain when classes convene in the morning.

Only a relatively few ideas have been advanced here in connection with television as a tool for education. The consideration has been in scope rather than in depth. Some of the applications mentioned are already being field tested, others are still in the laboratory stage. However, the future will see many effective changes in our instructional approach because of the realization of these trials.

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ETV Managers' Statement

Continued from page 14

might be extended further to include a discussion of the developments in communications research, automatic program equipment, satellite remote control transmitters, and many more. However, we mean to suggest only a few of the things that we may look forward to in the expanding and vital ETV system of 1968.

Such achievements as these—as well as others not even envisioned now—will be brought about only through a more imaginative approach to the potentials of this new medium on the part of government bodies, foundations, industry, educational and cultural institutions, and the public itself. The mere fact that already in 30 areas educational television has proved to be a valuable help to the formal educational system and concurrently has provided informational and cultural programs related to the broader educational goals of intelligent citizenship and mature living should by no means be construed as the ultimate extent of its normal sphere. But in order to explore new frontiers, to establish new dimensions, to pursue potentials yet unknown, the educational television movement must be strengthened

promptly in several important respects.

• The greatest need is for coordinated national leadership which will assure continuing reliable support for the movement—support of several types. *Public relations and promotion* support is essential to report the movement's rapid progress and to establish a clear image of educational television in the minds of all of our people. *Professional training* support is essential to improvement of personnel in the field. *Governmental relations* support is essential to insure proper utilization of ETV in terms of our public welfare. *Exchange of information* among stations enabling them constantly to improve their daily operation is another kind of necessary national service. And more fundamental than any of the rest is *financial support*—not only the securing of grants and contributions, but also development of a systematic and long-term national and local effort to seek out and identify many types of appropriate financial underwriting, and to establish an ongoing pattern of reliable sources of legitimate income from both public and private sources.

With such support established, other major needs must be met:

1. An even stronger *national program service* must be developed, again as an integral part of our society's educational and cultural pattern, to provide highest quality programs of all kinds (formal and informal, for school and college or for home and community) which are beyond the reach of the individual station.

2. A systematic plan for *prompt activation of ETV channels* must be devised to bring into operation at the earliest possible moment additional stations serving communities as yet unable to enjoy ETV benefits.

3. A coordinated plan must be established for *study, research,* and *evaluation* of the results of all types of educational television broadcasting in our society, with constant application of these findings to improve our use of the medium.

The fulfillment of these national needs becomes meaningful only in terms of local stations serving their own areas. For in the final analysis, the impact and therefore the value of educational television lies in the capacity of a station to serve its viewers. The purpose of such service must be the purposes of education generally, implemented in such a way as to communicate to all of the people in an area those educational and cultural values formerly communicated only to a relatively few.

• In striving toward this goal, we recognize our responsibilities to encourage experimentation, to stress imaginative production, to engage the minds of those with increasing leisure, to ally ourselves with those concerned with the educational crisis of rising enrollments and

teacher shortage, to offer the professional educator something more than a mere electronic tool which only mirrors current educational practice, to strive constantly for more effective educational use of this direct person-to-person communications method with the hope of penetrating and stimulating the minds of those who otherwise might not be so receptive to education and culture.

We call for vastly increasing support of all types of educational television broadcasting, consistent with demonstrated accomplishments of the past and the mounting potentials of the future. We are committed unequivocally to the overwhelming importance to our society of this communication adventure which motivates the mind of man to the pursuit of knowledge so necessary to his survival.

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Planning for Depth in ETV

Continued from page 6

tions for the teacher. Over many centuries of using the classroom as a basis of home operation, the teachers have discovered its inadequacy. For example, it was early found, in the teaching of certain scientific subject areas, that the classroom alone could not be used — that it had to be expanded. Many types of expansion took place. In certain scientific subject areas this led to the institution of such things as laboratory sessions — sessions in which the student could learn, smell, feel, and experiment with the objective theory which had been presented to him in the lecture classes. Similarly, television and its studios can be expanded. It may seem at times that we cannot go beyond the studio but this is not altogether true. Just as we have learned to go beyond the classroom in the use of film, we can also go beyond the immediacy of a given studio situation to still another studio situation, to an outdoor situation, to any number of situations which may be necessary to stimulate the student to further efforts in learning. Nevertheless, the classroom teacher has never been able to rid himself of the containment of four walls in a classroom situation. Therefore, the size of the class — the number of students who can participate in a learning experience in the the classroom must forever be limited to the size of the given classroom. It is true that in television the walls of the studio, too, may limit things;

however, if we were to look around at the potential of reaching a greater student-body size, a greater class size, certainly television presents this.

● The teaching telecast goes beyond the studio. It reaches to the isolated group separated many miles from a teacher. It may reach the isolated individual and bring to him a superior kind of instruction which without television he might never be able to attain. Much criticism has been made of the separation of student from teacher in the televising situation. Perhaps under certain conditions, this is a valid criticism. Some studies have found that a student group does not necessarily find that physical separation from the teacher is a limiting factor. The same research indicates that the student is not always constrained when he is unable to ask questions or enter into a group discussion situation. The gifted teacher with many years of classroom teaching experience in his subject area is able to anticipate the usual questions that are asked, and these are frequently clarified quickly, concisely, and thoroughly in the body of the lecture or in the teaching telecast presentation.

But in the final analysis we return again to the question: "What shall we do with this medium for all citizenry, of all ages, of whatever their previous learning experience? Apparently, we must first decide what shall truly be the goal of *all* education, regardless of level. If we are to recognize that man must be an integrated human being, widely learned in many subject-content areas, capable of taking such basic learning and advancing it to a point of positive thought for greater good for himself, his immediate family, or his community situation — if this is to be the goal of education, then perhaps we must recognize that more planning in depth must take place in educational telecasting. Planning the educational future of a democracy must help the individual to a realization of the interrelationship of all areas of knowledge. Certain satisfactions must be attained in life. Perhaps life moves too fast to attain them all, but each individual has a right to a place in his own small world. But his own small world is no longer as small as it was twenty-five, fifty, a hundred years ago. Man, by his very achievements, has enlarged the area of necessary knowledge. What is needed today on an ordinary day-to-day living basis, in order to be able to attain some of the desirable goals in life, is much more than the knowledge necessary fifty years ago.

Are we planning in depth? Is there a true relationship in what we plan in all educational areas between the offerings at the elementary, the secondary, and the higher education levels? Are we truly turning out well educated individuals, or only those who have been highly trained and are somewhat informed?

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